United States Environmental Protection Agency
Solid Waste and Emergency Response (5502G)
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Fall 1993

EPA

Superfund At Work

Hazardous Waste Cleanup Efforts Nationwide

Big D Campground Site Profile

Site Description:
A former sand and gravel quarry in Ashtabula County, Ohio

Site Size: 7.5 acres

Primary Contaminants:
Volatile organic compounds (VOCs) including toluene diisocyanate (TDI), and heavy metals such as barium, chromium, lead, and nickel

Potential Range of Health Risks:
VOCs are suspected carcinogens; heavy metals can cause liver, kidney, and neurological effects

Nearby Population:
3,900 within 3-mile radius

Ecological Concerns:
Conneaut Creek, Lake Erie

Year Listed on NPL: 1983

EPA Region: 5

State: Ohio

Congressional District: 11

Success In Brief

EPA Orders Incineration of Hazardous Chemicals

A quarter mile from the old Big D Campground, a sand and gravel quarry in Ashtabula County, Ohio served as a landfill for solvents, caustic chemicals and oily substances. These industrial by-products polluted soil and ground water over a 12-year period. Olin Chemical Corporation contributed the bulk of the waste and was liable for the cleanup under the Superfund law. Olin took several early actions to stabilize the landfill but refused to conduct a comprehensive remediation. When negotiations stalled, EPA ordered the company to incinerate the hazardous wastes and purify the ground water. Highlights of the overall effort included:

- Destruction of 93,000 cubic yards and 14,000 drums of hazardous materials;
- Extraction and treatment of ground water, including a 30-year monitoring program; and
- An interactive community relations program that fostered public participation in the cleanup process.

Actions taken at the Big D Campground site demonstrate EPA's persistence in enforcing the provisions of Superfund while designing a remedy protective of Ohio residents.

An estimated 14,000 drums containing manufacturing waste turned the quarry into a hazardous landfill.

The Site Today

By responding to local residents' concerns and familiarizing them with activities at the site, EPA and Olin won strong community support for the cleanup. Under EPA supervision, Olin is currently destroying hazardous contaminants in a mobile incinerator and operating an on-site wastewater treatment plant. The U.S. Army Corps of Engineers is providing oversight support and the state will assist in a 30-year monitoring program.

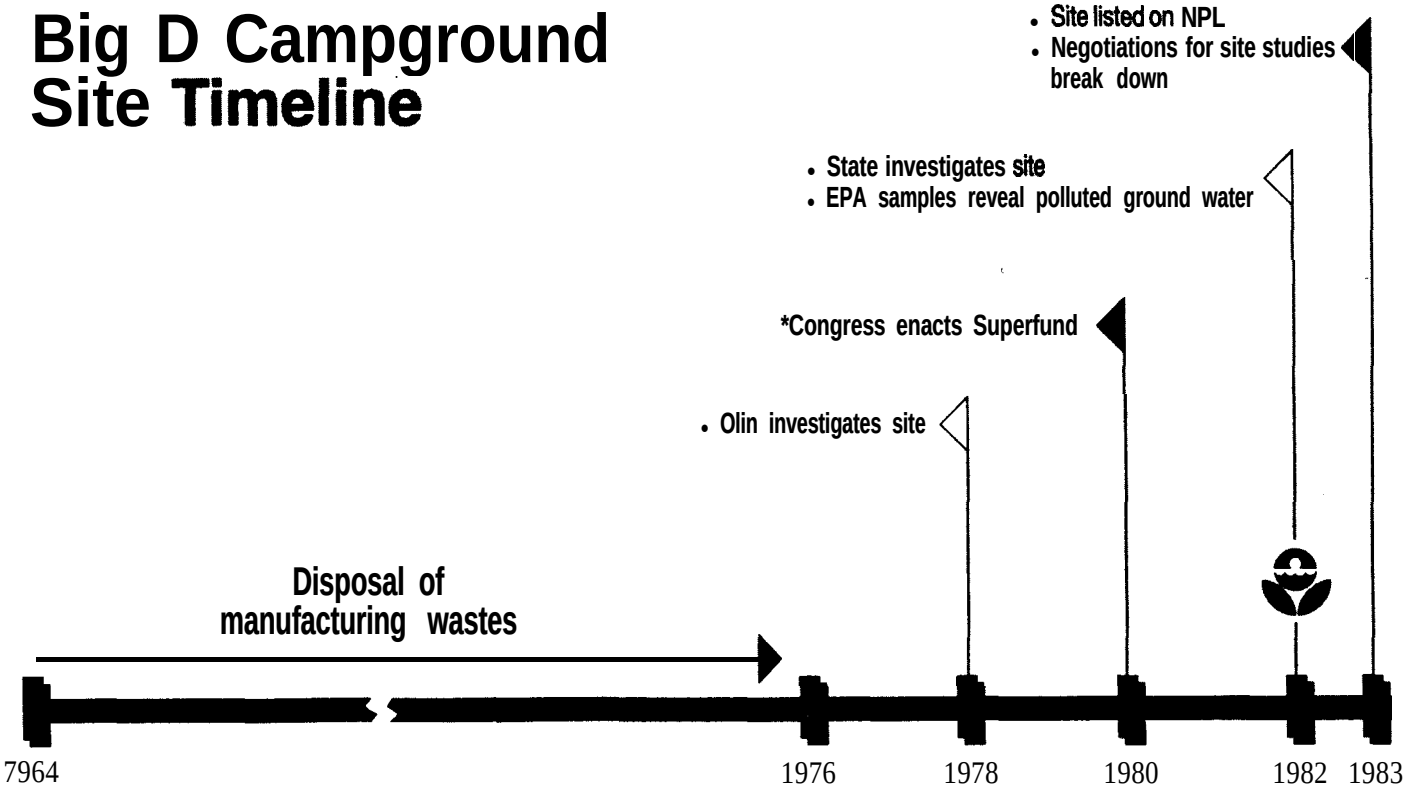
A Site Snapshot

T'he Big D Campground site is a former 7.5 acre sand and gravel quarry in Ashtabula County, Ohio. The site bears the name of a defunct private campground one-quarter mile away, but the two have no relationship. The quarry is less than two miles from Kingsville Township on Creek Road.

Between 1964 and 1976, the quarry converted to a landfill for the disposal of industrial waste. Olin Chemical Company transported solvents, caustics and oily substances to the site from a manufacturing plant in the county. Soil and ground water at the site were contaminated with volatile organic compounds (VOCs), including toluene diisocyanate (TDI), a specialty chemical used in the fabrication of cushions, bedding, and car seat foam. Heavy metals including barium, chromium, lead and nickel were present in varying concentrations. Surface water and sediments in nearby Conneaut Creek, which drains into Lake Erie, also were contaminated with low concentrations of VOCs and heavy metals. Some VOCs are suspected carcinogens; long-term exposure to heavy metals is associated with liver, kidney, and neurological effects.

Approximately 3,900 people live within a three-mile radius of the site; the closest residence is only 500 feet away. Some homes were connected to the municipal water system at the time EPA was completing site investigations in 1988. Other homes will be connected before the end of 1993. Contamination of the aquifer was fairly extensive due to pollutants migrating north of the site.

Big D Campground Site Timeline



Olin Undertakes Prescribed Cleanup Actions

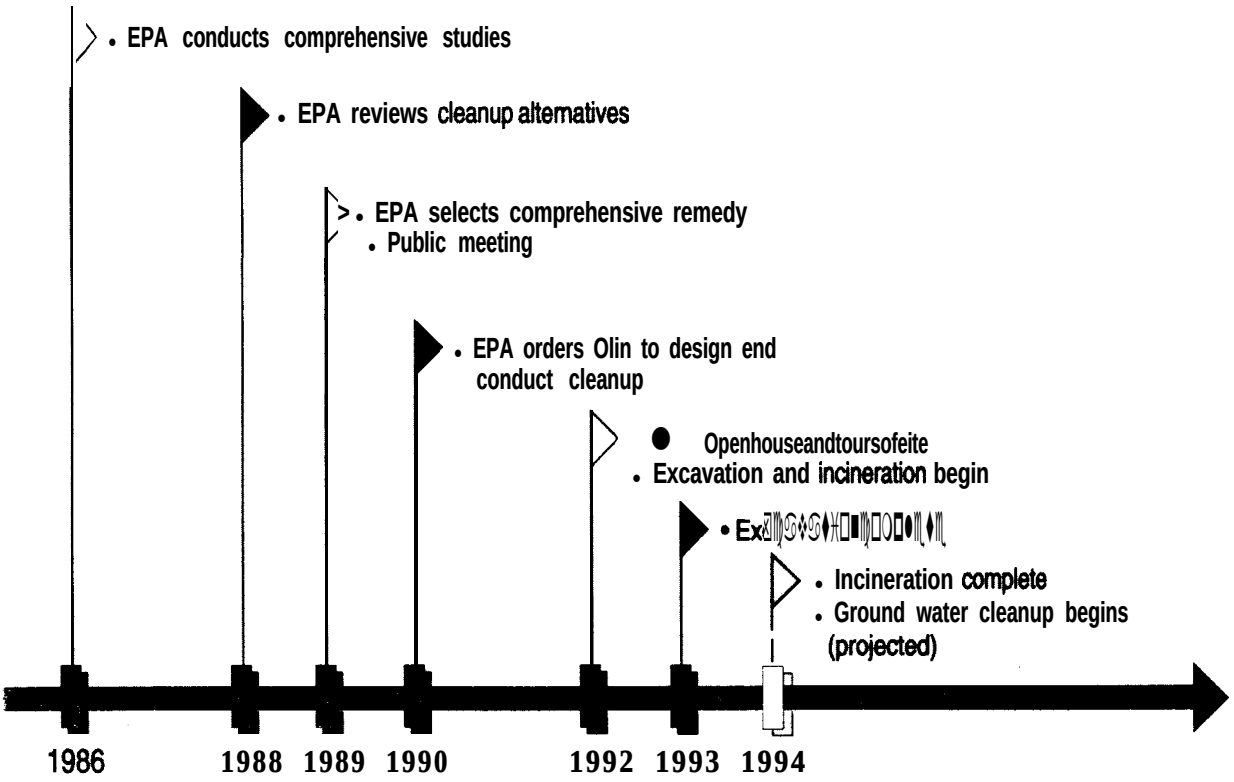
Company Discovers Contamination

In the early 1960s, sand and gravel quarries across the country degenerated into disposal pits for demolition debris, hazardous chemicals and industrial wastes. These materials invariably polluted the soil, ground water, and surrounding habitat. Laws preventing irresponsible waste disposal practices wouldn't be written for another 20 years.

One such quarry in Ashtabula County, Ohio served as a landfill for more than 12 years. Olin Chemical Corporation, a major contributor of waste to the site, transported an estimated 14,000 drums containing manufacturing wastes to the quarry. These drums were buried under consecutive layers of dirt; the landfill eventually encompassed 7.5 acres. In 1978, Olin investigated possible contamination problems while stabilizing the landfill, badly eroded by rain and snow. Olin collected water samples from three ground water monitoring wells; analysis revealed the presence of volatile organic compounds (VOCs). In response to complaints from local residents, the State of Ohio Environmental Protection Agency (OEPA) conducted investigations and confirmed the ground water contamination. In 1982, the state notified EPA, requesting assistance under the new Superfund program.

Two years earlier, Congress had enacted the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) establishing the Superfund program to address thousands of hazardous waste sites nationwide. CERCLA empowered EPA to compel those responsible for contaminating sites to undertake prescribed cleanup actions. In September 1983, EPA added the Big D Campground site to the National Priorities List (NPL), a roster of hazardous waste sites requiring cleanup under the Superfund program.

Earlier that spring, erosion of the landfill's surface exposed buried drums. In response, Olin covered them over with clay and reinforced the base of the slope. Olin also dug a collection trench to remove rainwater from the



covered area, and installed eleven monitoring wells to measure the presence of any off-site movement of polluted ground water.

EPA ordered Olin to conduct both phases of the work

Site Investigations Determine Cleanup Design

From late 1983 to early 1986, EPA had a difficult time negotiating with Olin to conduct field investigations; the company ultimately refused to participate. Using Superfund resources, EPA performed the studies in November 1986 and analyzed a number of alternatives to clean up the Big D Campground site. EPA sampled soil, surface and ground water, sediment, and wastes at the site to determine the type, quantity, and location of contaminants and the rate of migration. After this evaluation, EPA proposed a remedy consisting of two phases: on-site incineration of bulk wastes and contaminated soil, and treatment of ground water at an on-site wastewater treatment plant. The cleanup proposal reflected an attempt to permanently eliminate rather than merely contain or move contaminated materials.

EPA presented cleanup options at a public meeting and incorporated community concerns when selecting the remedy for the site. In September 1989, EPA entered into negotiations with Olin to perform the cleanup work, but once again, Olin refused to voluntarily cooperate. In response, in March 1990, EPA issued a unilateral administrative order requiring Olin to design and perform both phases of the cleanup. Failure to comply with such an order could have resulted in fines of up to $25,000 per day. If EPA conducted the cleanup, Olin could have been sued for up to three times the actual cleanup cost. Five weeks after the order was issued, Olin sent EPA a notice of intent to comply by agreeing to pay for, design, and perform the site cleanup at an estimated cost of $39 million.

Incineration Will Safely Destroy Site Hazards

A series of preliminary test burns was conducted in August and September 1992. These "mini-burns" established the incinerators optimum operating range. The test burns were followed by a trial burn in September 1992 that simulated actual burning conditions. 'We take a series of steps: you don't just flip a switch," explained the Remedial Project Manager, Kevin Turner.

EPA required that this incinerator achieve a 99.99% "destruction and removal efficiency." During the trial burns, operators continuously monitored emissions from the incinerator to ensure safety and optimum efficiency. Standard EPA procedures require that the entire process be continuously monitored.

Olin completed excavation of hazardous materials and drums from the landfill in October 1993. EPA supervised this effort with help from the U.S. Army Corps of Engineers. Incineration will continue through next spring.

An on-site, mobile incinerator destroys the hazardous materials

Three Steps to Clean Ground Water

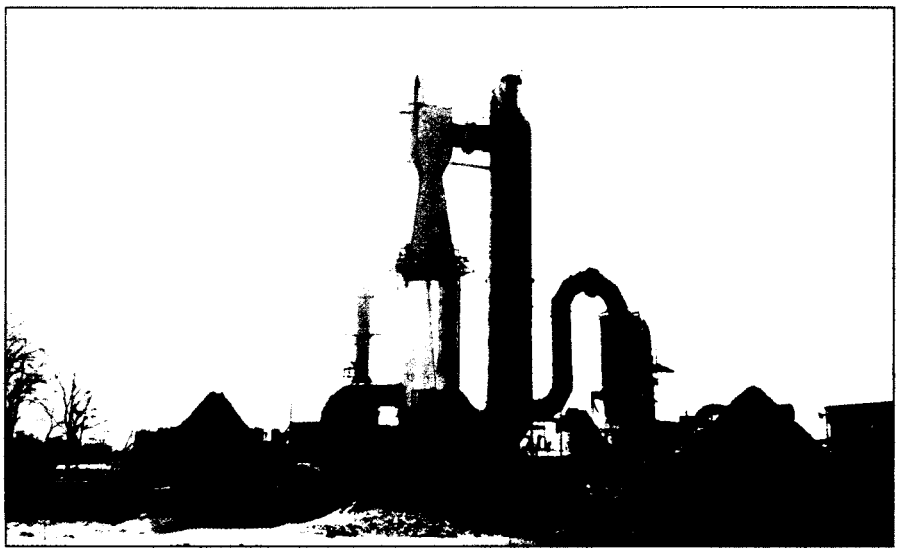
Under terms of the remedial plan, Olin constructed a waste water treatment plant at the site to serve two functions. Currently, the plant treats contaminants from the emission control devices in the incinerator and rainwater that collects in excavated areas of the landfill.

When the incineration is completed, the treatment plant will clean polluted ground water using both carbon filter and air stripping systems. Olin will install a recharge trench and eight extraction wells near the site to draw up the contaminated ground water for removal of VOCs and heavy metals; clean water will be discharged into nearby Conneaut Creek. Corn--prehensive ground water treatment is scheduled to begin in the spring of 1994 and will continue for 30 years. Throughout this period, 70 monitoring wells will help to ensure that the cleanup continues to be effective. The use of ground water at the site will be restricted through legal deeds.

Incineration: A Safe and Proven Technology

The mobile incinerator operating at the Big D Camp ground site is a marvel of technology. Workersingas masks and safety suits remove from the landfill one barrel of waste at a time, identify the contents, and transfer the wastes into the incinerator along with the emptied and shredded drums.

The incinerator's two combustion chambers reach temperatures of 1,740' and 2,400° Fahrenheit. The first chamber separates contaminants from the soil and the second destroys harmful chemicals. Attheendofa burn, operators remove and test the ash for residual pollutants. If any remain, the ash is incinerated again. The smokestack releases only clean vapors and steam after air pollution control devices remove acid gases and particulates. Air monitors on the smokestack and around the site continually test the air quality. The incinerator operates 24 hours a day, seven days a week, averaging 235 tons per day.



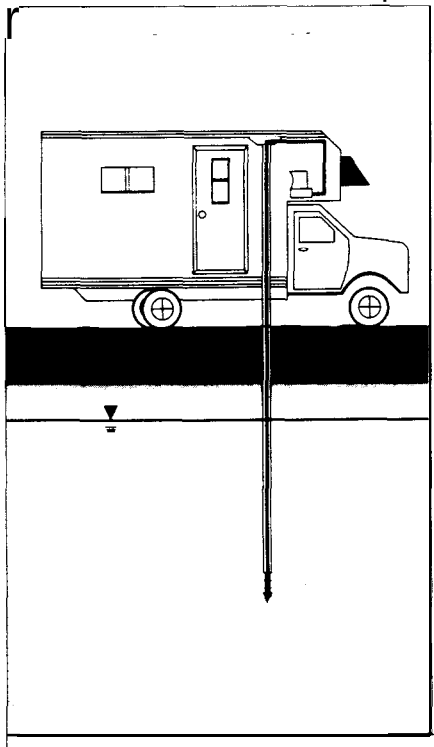
EPA Heeds Local Concerns

Community involvement has been a successful aspect of EPA's efforts at the Big D Campground site. EPA and Olin representatives have spent many hours providing area residents and local officials with information on site conditions and cleanup activities. Information about the site and cleanup progress is updated regularly and available to the public through a toll-free hotline: 1-800-626-SITE.

Concerns about the effects on the community were aired with EPA and Olin officials at both formal meetings and "availability sessions" held in the area. Olin representatives discussed site activities in meetings with the mayor and city council, and EPA staff visited residents in their homes to learn about particular concerns.

Some residents questioned the use of conventional wells for sampling ground water near homes, fearing property damage and disruption of routine activities. EPA approved a simpler "direct push" technique for taking ground water samples. Using a hydraulic rig, engineers drive into the ground a temporary, small diameter sampling tube called a penetration rod, that is removed after the sample is collected. The property is left virtually undisturbed and the borehole fills back in immediately. *(See graphic on page 6.)*

On May 30, 1992, the RPM and EPA Community Relations Staff, Olin engineers, and state officials conducted tours and showed visitors the incinerator and other equipment to be used in the cleanup. Keeping the community informed lead to local acceptance and satisfaction that the remedy would be expeditiously executed.



Graphic courtesy of Subsurface Technology, Inc.

Engineers collected ground water samples under homes near the Big D Campground site.

Success at Big D Campground

State and EPA discovery of hazardous materials and contaminated ground water lead to a responsible cleanup of this Ashtabula County landfill. Using legal authority provided under the Superfund law, EPA ordered Olin Chemical Company to undertake comprehensive cleanup activities. The company complied by starting incineration of soil and other materials in late 1992; that effort should be completed by the spring of 1994. Partial treatment of g-round water is scheduled to start in late 1993; monitoring will continue for 30 years.

A further provision of Superfund allows EPA to initiate a cost recovery claim against Olin to recover funds expended during the site investigation and for oversight costs incurred during the cleanup. Regional staff are currently working with the U.S. Department of Justice on this action.

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